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ABSTRACT

In an effort to foster group work, encourage critical thinking, and assist students in understanding the costs and benefits of being a critical thinker, a classroom activity was developed for use in an introductory psychology course. In the activity, students are divided into groups and presented with a taxonomy of cognitive objectives, emphasizing the importance of such concepts as knowledge, comprehension, application, analysis, synthesis, and evaluation. Next, a fictitious case history of criminal behavior and related explanatory information is introduced to the groups. Using play money, groups purchase additional information to explain the behavior. At the end of the allotted time, groups make brief presentations to the class on their conclusions. A panel of judges consisting of volunteer students from other classes rates the groups' analyses based on the cognitive objectives. Students earn assignment points based on money left over and the judges' ratings. Since students are earning assignment points just for trying, the activity is a non-threatening way to encourage them to use their critical thinking skills, to draw connections between pieces of information, and to use their lecture notes and textbooks as supplemental resources. The educational objectives and sample information for purchase are appended. (TGI)

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The Costs and Benefits of Critical Thinking

by

Randall E. Osborne, Judy Laws, Ken Weadick & Vicki Mantooth

Indiana University East

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Abstract

This activity can be used with small to medium size classes (up to about 50), although the ideal size would be between 15-35. No prior understanding of critical thinking is necessary although the demonstration should be prefaced with information about critical thinking that the students can use as they work in groups. A 75 minute class period is preferred but this could be adapted for two shorter periods. The demonstration is effective for fostering group work, encouraging critical thinking, and understanding the costs and benefits of being a critical thinker.

Concept

This activity demonstrates the relationship between the amount of effort that is spent (illustrated in this activity as money) and the benefits gained in terms of critical thinking (illustrated in this activity as assignment points earned). This is accomplished by allowing student groups to purchase information about a case and then using the information purchased to present a critical analysis of the case to the class. Students earn assignment points for how much money they have left and how "sophisticated" the judges rate their analyses to be.

Materials Needed

A summary of Bloom's (1956) taxonomy of educational objectives (included at the end of this activity), Enough Monopoly (or play) money for each group to have $240.00, and additional case information that groups can

purchase. Each piece of information is written on a notecard and stacked according to monetary value, either $25, $40, or $75, (sample lists are included at the end of this activity).

Instructions

The instructor will need to prepare and present a brief lecture on Bloom's taxonomy. Make sure that students understand each of the cognitive objectives. After students understand these objectives, they should be related to critical thinkers. The discussion should center on the fact that a critical thinker goes beyond the simple facts (knowledge), makes it a point to know the meaning of the information (comprehension), can generalize the knowledge (application), is able to break the information down into subparts and recognize how those subparts might interrelate (analysis), can put the information back together into a form that now has more meaning (synthesis) and can critically evaluate the strengths and weaknesses of the conclusions drawn (evaluation).

Students are now read a short case history about Rick, a man who climbed a tower and shot and killed or wounded multiple persons.

The following case information is read to the class:

"On April 1, 1988 Rick Donlan took a sniper rifle, and climbed to the top of a clock tower on the campus of a major University in the United States. Slowly, over the next four hours, he killed and wounded many students before a SWAT team stormed the tower and Rick, himself, was killed."

Each group is then given the following four pieces of information about the case free:

1.) He killed 14 persons and wounded 11
2.) He had a protruding forehead

3.) His favorite movies were Jean Claude Van Damme movies
4.) His favorite magazine was Guns & Ammo

They are instructed that additional information about the case and Rick's history can be purchased from the instructor. There are three cost categories ($25, $40 & $75) of information (and students are told that the more expensive the information the more informative it will be).

Students are then given 30 minutes to devise a strategy for purchasing information, analyzing that information and preparing a presentation for the class on why they think Rick did what he did. Since there are fewer pieces of highly informative ($75) information than the amount of money would allow groups to buy, the information is sold on a first come, first serve basis. This motivates groups to develop their purchase strategies quickly and to use the rest of the time to use that information to develop their analyses. At the end of the 30 minutes, groups make brief (3-5 minute) presentations to the class (and a panel of student judges I bring in as volunteers from other classes) about why they think Rick committed these murders.

Students are told that they will earn assignment points based on money left over and the judges rating of how well they used Bloom's objectives in building their case. (If you have 5 groups, the group wth the most money receives 5 points, then the next highest amount of leftover money receives 4 points, and so on). The groups also earn points for the judges' ratings of their analyses (with 5 groups 5 points for the best analysis, 4 points for the second best analysis, and so on). Although any number of groups could be used, too many groups mean too few pieces of information can be bought and can inhibit sophisticated use of the information. It is better to have fewer groups (even though they will be larger) because analyses will be more sophisticated and there will be fewer presentations to listen to.

A few important things to note for the students:

1.) Once a piece of information is bought, no other group can buy the same information.

2.) They must present the cards with the information they purchased to the judges before making their presentation (this allows the judges to determine whether the students are drawing conclusions that go beyond their data, etc.)

3.) They can use information from the textbook and lecture to support their arguments. (If they discover, for example, that Rick had severe damage to his Amygdala, they may turn to their text and discover that the Amygdala has been linked to aggression and fear).

Students are told that it is important for them to be able to present an argument that demonstrates all of Bloom's cognitive objectives (i.e., they must "apply" textbook and lecture information to the current situation). Since educators are encouraged to teach to these skills, it would be valuable for students to use those same objectives in doing their work. It is quickly obvious to students that their is a relationship between the cost of doing critical thinking (in this case spending more money to gather more information and evidence) and the benefits reaped (in this case a higher rating of their analysis leading to more points).

Discussion

After the students have made their short presentations to the the class, the judges retire to the hallway and reach their decisions about the "sophistication" of the groups' analyses. We provide the judges with a list and description of Bloom's objectives and the students give the judges a written summary of their analysis for them to use in their considerations.

Once the judges have made their decisions and groups have tallied their points (remember they will earn at least one assignment point

for amount of money left over even if they have none and at least one point for their analysis) we focus the discussion on critical thinking.

An example of the connection between Bloom's levels is used to illustrate to the students the difference between "thinking" and "critical thinking". A thinker might simply repeat the facts purchased from the cards (demonstrating the "knowledge" level of Bloom's taxonomy) whereas, a critical thinker would take that information and explain what those facts mean (at least taking the information to the "comprehension" level of Bloom's taxonomy).

The costs of critical thinking include:

- more time consuming
- requires acquisition of more information
- may reveal one's own biases and assumptions

The benefits of critical thinking include:

- more sophisticated analyses of information
- more flexibility in thinking
- use of more logical inferences
- more rational conclusions based on an examination of evidence

Discussion about this activity is usually quite animated and student feedback about it has been overwhelmingly positive. Since the students are earning assignment points just for trying, it is also a very non-threatening way to encourage them to use their critical thinking skills, to draw connections between pieces of information, to use their lecture notes and textbooks as supplemental resources, and encourage groups to brainstorm. We use this demonstration in Introductory Psychology courses but, by varying the scenario, it could fit into virtually any course and any topic.

Writing Component

Since we build our discussion of critical thinking around effective thinking and communication, important components of this activity are the oral presentation and the written analysis that groups turn in. The judges use these written analyses, in part, in judging the sophistication of the group's analysis. Students are reminded to reflect Bloom's cognitive objectives in both their oral presentations and the written summaries they turn in. It is important to note that the written analyses and oral presentations are not graded. Since the major goal of the activity is to demonstrate the connection between the costs and benefits of critical thinking, students earn assignment points for their efforts.

References

Bloom, B.S., Englehart, M.B., Furst, E.J., Hill, W.H., & Kratwohl, O.R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook 1: The cognitive domain. New York: Longman.

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Bloom's Objectives

Knowledge = Specific facts

Comprehension = Understanding of those facts

Application = Can generalize those facts to other situations

Analysis = Can break problem down, recognize connections between subparts

Synthesis = Can assemble parts into a more meaningful whole

Evaluation = Critically uses information to make (reasonable) judgments

$25.00 Information

He was single and has never been married

He was 38 years old

He was a Security Guard at an Avon Factory

His Mother Had Blonde Hair

He was the Oldest of Nine Children

He is Shy

He Prefers to be Alone

He Often Saw "Puppies" in Rorschach Inkblots

He Had Rubella When he was 4 Years Old

He Was Allergic to Penicillin

His Father Was an Alcoholic

He Placed First in his Fourth Grade Science Fair With a Project on Electricity in the Home

He Was the Youngest of Three Children (he had two older brothers)

His Mother Occasionally Worked as an Exotic Dancer (but only when they really needed the money)

His First Car was a Beat-up, Black, Ford Pinto

$40.00 Information

When He Was Little His Mother Sometimes Dressed Him Like a Girl

Of the 14 People he Killed, 9 Were Women

He Sometimes Suffered From Severe Migraines

The Morning of the Murders He Suffered 3 Blackouts

Twice as a Child he Was Evaluated by Psychiatrists

He Was an Ex-Marine Who Hates Country Music

He Was an Expert Marksman Who Practiced on the Firing Range

He Flunked Out of Medical School

He Meticulously Stands His Rolled Pairs of Socks on End in the Sock Drawer by Color

His Father Died in a Freak Accident When Rick Was 14 Years Old

Early IQ and Achievement Tests Suggested Competency Well Beyond his Level of Performance

Getting a Driver's License was Delayed Until 18 Years of Age Because he Was Caught Joy Riding in a Stolen Car at Age 15.

Despite Extremely Poor Attendance and What Teachers Labeled as Lack of Motivation, He Graduated High School in the Top 15% of his Class

$75.00 Information

At The Age of 7, He Skinned His Cocker Spaniel Alive

He Was Repeatedly Molested by a Mentally Retarded Uncle. An Incident Which was Covered up and Denied by the Few Family Members Who Knew About it.

He Was Passed Over 4 Times For a Promotion at the Post Office

He Bred Doberman Puppies as a Hobby

He Often Took His Female Dates to See Dogfights

His Only True Love Left Him for a Singer in a Country Band

He Has "Macho Man" Tattooed on his Left Forearm

He Was Hearing Voices Telling Him to Kill

He Was Hospitalized Twice Because of Seizures

All the Women He Killed Had Blonde Hair

He Left a Note Behind Saying, "This is The Only Way I Could Stop The Voices"

An Autopsy Revealed Major Damage to his Amygdala